

Student name: \_\_\_\_\_

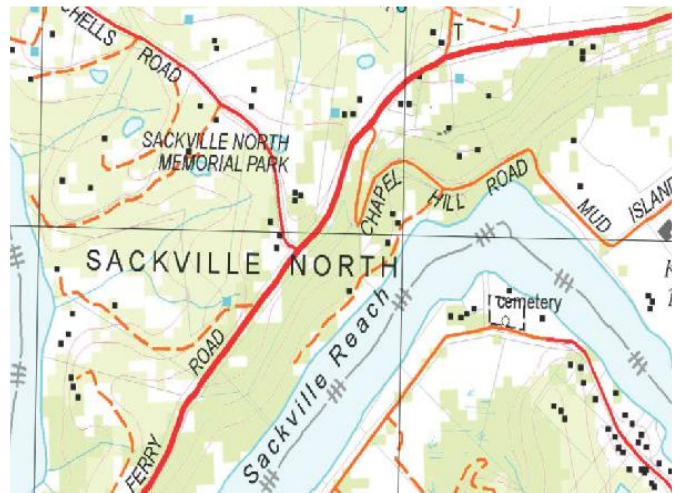
# Factors That Shape Places

## Sackville North

*As urban Sydney sprawls in all directions, Northwest Sydney is changing dramatically. This geographical inquiry will focus on the connections between people and the environment at Brewongle Environmental Education Centre and its surrounds at Sackville North on the Hawkesbury River.*

### Inquiry Questions:

- How does the natural environment influence people and places at Sackville North?
- How have people changed the natural environment at Sackville North and the local Hawkesbury River Catchment?
- What are the environmental factors that increase bush fire risk at Sackville North?



### Health and Safety Issues

As you are working out in the field you need to be aware that:

- Ground material is often covered in moss and can be very slippery.
- Vines and dense undergrowth can trip.
- Fallen trees can be rotten and weak.
- Some animals can deliver painful or venomous bites.
- On slopes, rocks can be easily dislodged.

### Outcomes

**GE3-1:** Describes the diverse features and characteristics of places and environments

**GE3-2:** Explains interactions and connections between people, places and environments

**GE3-3:** Compares and contrasts influences on the management of places and environments

**GE3-4:** Acquires, processes and communicates geographical information using geographical tools for inquiry

# Inquiry Aim:

The aim of this geographical inquiry is to investigate the factors that shape places, with a focus on the interconnections between people and the environment at Sackville North.

## Pre-Visit Lesson One: The Study Site

SIX Maps has been developed by the NSW Department of Land and Property. It provides access to cadastral (land and property boundaries) and topographic (hills and valleys) information, satellite data and aerial photography. Use [SIX Maps](#) to complete the following tasks.

1. On SIX Maps, type in Sackville North.
2. Click on Basemaps (top right of page) and drag the tab down until you can see the Street and Suburb names.
3. Zoom out and fly around until you find your local Suburb.
4. Click on Basemaps and move the tab back up until you can see the satellite image.
5. Zoom out to a scale around 1:600 000 (you can see this in the bottom left of screen). Follow the Hawkesbury Nepean River upstream from the ocean to Warragamba Dam. By holding a piece of string to your computer screen, estimate the length of the Hawkesbury Nepean River.

# Pre-Visit Lesson Two: Geographical Questions

*Geographical questions are questions which help you identify the information you need to answer the inquiry questions. Your inquiry questions are written on Page 1.*

**Brainstorm:** What are some geographical questions you might ask for this Inquiry?

**Example:** How has the natural environment influenced where people live at Sackville North?

Geographical question 1: \_\_\_\_\_

\_\_\_\_\_

Geographical question 2: \_\_\_\_\_

\_\_\_\_\_

Geographical question 3: \_\_\_\_\_

\_\_\_\_\_

Geographical question 4: \_\_\_\_\_

\_\_\_\_\_

Geographical question 5: \_\_\_\_\_

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# Pre-Visit Lesson Three: Planning Your Inquiry

Answer the following questions for each of your geographical questions.

1. What information is needed to answer this geographical question and where can you find that information?

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2. What are the geographical tools you need to access the information?

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3. Develop a system for recording the information you get.

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# Fieldwork Activity One: Topography & Water Quality

1. You will walk from Brewongle EEC to the Hawkesbury River. While on your walk, look out for the following examples of erosion and place a tick next to the ones that you see.

Example of erosion	Tick if evident	Example of erosion	Tick if evident
Indented track		Loose rocks	
No vegetation on track		Landslips	
Compacted soil		Protruding tree roots	

2. Were the examples of stormwater erosion mostly along the track or were they in the bush?
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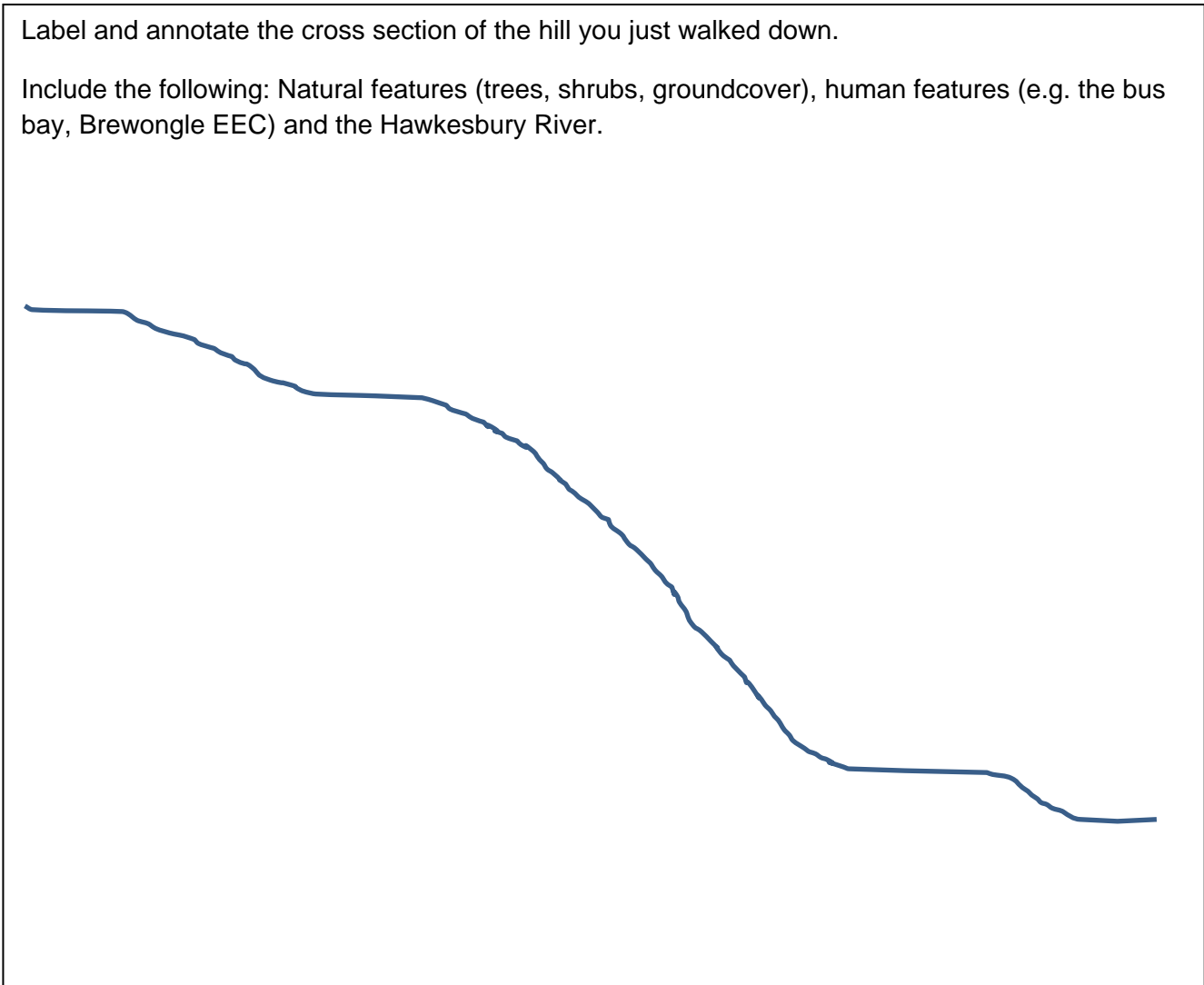
3. How does vegetation prevent erosion?
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## Hawkesbury River Water Quality

	Result	Poor	Average	Healthy
<b>pH level</b>		0 – 3	4 – 5 or 9 - 10	6 - 8
<b>Salinity</b>		>1000 ppm	501 - 1000 ppm	0-500 ppm
<b>Dissolved Oxygen</b>		< 2mg/L or > 12mg/L	2 - 4mg/L	5 – 11 mg/L
<b>Turbidity</b>		>100NTUs	50 - 100NTUs	< 50NTUs

Label and annotate the cross section of the hill you just walked down.

Include the following: Natural features (trees, shrubs, groundcover), human features (e.g. the bus bay, Brewongle EEC) and the Hawkesbury River.



## Activity One Summary: Topography and Water Quality

Why is good water quality in the Hawkesbury River important for people and places at Sackville North? (Consider the different ways people use the Hawkesbury River.)

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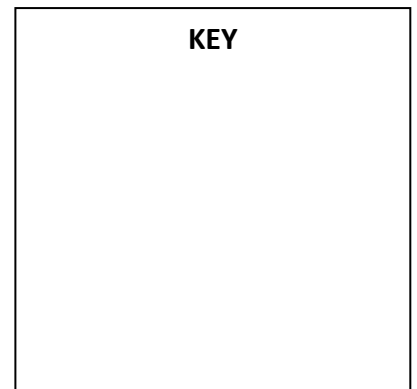
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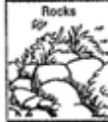




# Fieldwork Activity Two: Habitat Assessment

**Sound Map:**



### Habitat Assessment:

*Tick the boxes that describe the area you are looking at.*

Area	Habitat								
Bushland	 <input type="checkbox"/> none <input type="checkbox"/> some <input type="checkbox"/> lots	 <input type="checkbox"/> none <input type="checkbox"/> some <input type="checkbox"/> lots	 <input type="checkbox"/> none <input type="checkbox"/> some <input type="checkbox"/> lots	 <input type="checkbox"/> none <input type="checkbox"/> some <input type="checkbox"/> lots	 <input type="checkbox"/> none <input type="checkbox"/> some <input type="checkbox"/> lots	 <input type="checkbox"/> none <input type="checkbox"/> some <input type="checkbox"/> lots	 <input type="checkbox"/> none <input type="checkbox"/> some <input type="checkbox"/> lots	 <input type="checkbox"/> none <input type="checkbox"/> some <input type="checkbox"/> lots	 <input type="checkbox"/> none <input type="checkbox"/> some <input type="checkbox"/> lots

Score: \_\_\_\_\_

None = 0    Some = 1    Lots = 2

Add up the score you gave the habitat and use the rating chart to rate the habitat: \_\_\_\_\_

<p><b>Rating Chart</b>          0 - 3 = Poor          4 - 6 = Fair          7 - 9 = Average          10 - 14 = Good          15 - 18 = Excellent</p>
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## Activity Two Summary: Habitat Assessment

How have people changed the natural environment around Brewongle EEC, Sackville North and the local Hawkesbury River Catchment?

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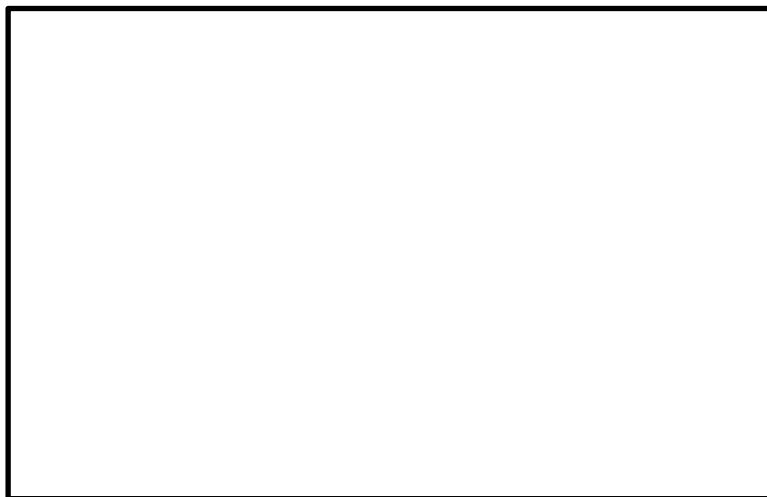
# Fieldwork Activity Three: Vegetation & Bushfires

Create a nature map with leaves and other plant material to show the **layers** and **density** of two different sites. Take a **photo** of both nature maps and insert them later into your worksheet.



## Site A – The Gully

Nature Map: (Take a photo of your nature map and insert the photo back at school)



Use your nature map and the results of the burn test to evaluate the moisture content and the density of the shrub layer at Site A. *Circle the box below that corresponds with your results.*

Fire Risk				
		Shrub Layer Density		
		<30%	30-70%	>70%
Moisture Content	Wet	<b>MODERATE</b>	<b>MODERATE</b>	<b>HIGH</b>
	Moist	<b>MODERATE</b>	<b>HIGH</b>	<b>EXTREME</b>
	Dry	<b>HIGH</b>	<b>EXTREME</b>	<b>CATASTROPHIC</b>

## Site B – The Ridge

Nature Map: (Take a photo of your nature map and insert the photo back at school)



Use your nature map and the results of the burn test to evaluate the moisture content and the density of the shrub layer at Site B. *Circle the box below that corresponds with your results.*

<b>Fire Risk</b>				
		Shrub Layer Density		
		<30%	30-70%	>70%
Moisture Content	Wet	<b>MODERATE</b>	<b>MODERATE</b>	<b>HIGH</b>
	Moist	<b>MODERATE</b>	<b>HIGH</b>	<b>EXTREME</b>
	Dry	<b>HIGH</b>	<b>EXTREME</b>	<b>CATASTROPHIC</b>

### Activity Three Summary: Vegetation and Bushfires

What are the environmental factors that increase bush fire risk at Sackville North?

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# Post-Visit Lesson One:

## Population Growth

Use reliable websites to source secondary data and other statistical information about population growth in Northwest Sydney and the Greater Sydney Region. Evaluate and summarise the data and information into 5 key points.

*Secondary data is data collected by someone other than you or for a purpose other than your research.*

*Reliable websites include the Australian Bureau of Statistics and State and Local Government.*

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_
3. \_\_\_\_\_  
\_\_\_\_\_
4. \_\_\_\_\_  
\_\_\_\_\_
5. \_\_\_\_\_  
\_\_\_\_\_

Develop and conduct a survey of community members about their thoughts on the impact of population increase on our nature reserves (positive and negative).

- Include impacts on people, plants, animals and the Hawkesbury River.
- Write 5-10 questions and practice doing the survey yourself.
- Your survey might use email or online networks, or in person (with an adult).
- You may survey people you know who live in the area or local businesses.
- Survey at least 5 people.

# Post-Visit Lessons Two and Three:

## Processing the Data

Below is a list of geographical tools used to collate, review and evaluate data and information. Choose at least 5 of these tools to analyse and present your data in a Word document.

*Note: The information you create here will be used in your documentary assessment task on the next page.*

- Using a **topographic map** or **satellite image** as a base map, locate Brewongle and identify surrounding natural environmental features.
- Collate data from your in-depth study into a **table** to summarise your findings.
- Create **flowcharts** to demonstrate your understanding of the ways the environment influences people and places.
- Assemble and annotate **photographs** to provide a visual representation of the site. Analyse and label interconnections.
- Develop **consequences charts** to explain human impacts (positive and negative). Show the impacts on [Google Tour Builder](#). Use photos taken on the day to match parts of the tracks we walked.
- Use a **T-chart** to represent data on advantages and disadvantages of population increases in Northwest Sydney.
- Construct a **flow chart** or **concept map** to explain the role of government, and other major stakeholders in sustainably developing Northwest Sydney and protecting our nature reserves.
- Conduct a search for Brewongle EEC on the [Rural Fire Service Bushfire Prone Land Tool](#). Discuss how the results will change with seasons throughout the year.

# Assessment Task:

## Communicating Geographical Information

Work in small groups to develop a 5-6 minute documentary on the possible effects of population increase on our nature reserves using Sackville North as a case study. Your documentary should include:

- Information on the traditional use of the place by Darug people.
- Information on the types of land use by early European settlers.
- A clear description of the various land uses around Brewongle EEC today and an explanation of some of the consequences for the environment.
- Tools to support your information, such as maps, satellite images, graphs, statistics, flowcharts, labelled photographs, diagrams, illustrations/sketches and other labelled visual representations.
- A description of the role of government in organising or managing the place as well as the perspectives of other stakeholders, for example developers, conservationists, recreationists and local residents.
- An evaluation of the potential impact of bushfire on the local area.
- A description and justification of a course of action to decrease the impact of changes to the natural environment around Brewongle EEC.

Please refer to the [Stage 3](#) Geography page on the Brewongle website for extra resources, including a Storyboard Template and a “How to Guide for iMovies”.